Operating Instructions

Control unit Ex p

> 8624/1

STAHL

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2 General Information

2.1 Manufacturer

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2.2 Information regarding the Operating Instructions

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We reserve the right to make technical changes without notice.

2.3 Symbols Used

▶	Action request: Describes actions to be provided by the user.
▷	Reaction sign: Describes the results or the reactions to the actions taken.
✗	Bullet
☞	Sentinel: Describes the notes and recommendations.
	Warning sign: Danger from energised parts!
	Warning sign: Danger due to an explosive atmosphere!

3 General Safety Information

3.1 Safety Instructions for Assembly and Operating Personnel

The operating instructions contain basic safety instructions which are to be observed during installation, operation and maintenance. Non-observance can lead to endangerment of persons, plant and the environment.

⚠WARNING
Risk due to unauthorised work being performed on the device! ▷ Risk of injury and damage to equipment. ▶ Assembly, installation, commissioning, operation and maintenance must only be performed by personnel who are both authorised and suitably trained for this purpose.

Before assembly/commissioning:

- ▶ Read through the operating instructions.
- ▶ Give adequate training to the assembly and operating personnel.
- ▶ Ensure that the contents of the operating instructions are fully understood by the personnel in charge.
- ▶ The national installation and assembly regulations (e.g. IEC/EN 60079-14) apply.

When operating the device:

- ▶ Ensure the operating instructions are made available on location at all times.
- ▶ Observe safety instructions.
- ▶ Observe national safety and accident prevention regulations.
- ▶ Only run the device according to its performance data.
- ▶ Servicing/maintenance work or repairs which are not described in the operating instructions must not be performed without prior agreement with the manufacturer.
- ▶ Any damage may render explosion protection null and void.
- ▶ No changes to the device impairing its explosion protection are permitted.
- ▶ Install and use the device only if it is undamaged, dry and clean.

If you have questions:

- ▶ Contact the manufacturer.

3.2 Warnings

Warnings are sub-divided in these operating instructions according to the following scheme:

⚠WARNING
Type and source of the danger! ▷ Possible consequences. ▶ Measures for avoiding the danger.

They are always identified by the signalling word “WARNING“ and sometimes also have a symbol which is specific to the danger involved.

3.3 Conformity to Standards

The device complies with the following standards and regulations:

✗ Directive 94/9/EC
✗ EN 60079-0, EN 60079-2, EN 60079-7, EN 60079-11, EN 60079-18

4 Designated Use

The control unit 8624/1 is an explosion-protected device to monitor and control overpressure in Ex p enclosures.

In combination with an appropriate enclosure with ingress protection ≥ IP54 (IP65 recommended) and the air supply unit, the control unit offers a pressurised protection.

In combination with the air supply unit, the control unit 8624/1 is approved for use in hazardous areas zones 1 and 2 (category 2).

The control unit controls the overpressure in the Ex p enclosure and monitors the states via the output contacts.

Pressurised enclosure

Two uses can be distinguished for pressurised enclosures:

✗ Operation with compensation of leakage losses
✗ Operation with permanent purging

☞	In both operating modes, the enclosure should be minimum ingress protection IP54 (IP65 recommended).

Operation with compensation of leakage losses:

In this operating mode, the potentially explosive gas mixture of the surrounding atmosphere is first removed from the enclosure by purging. Then, an amount of compressed air or inert gas high enough to compensate leakages in the enclosure and to maintain a minimum overpressure with regard to the surrounding atmosphere is supplied.

☞	During the purging, a differential pressure of ≥ 4 mbar is built up. During operation, a differential pressure of ≥ 2 mbar is sustained.

Operation with permanent purging:

In this operating mode, the enclosure is permanently flushed with compressed air or inert gas for evacuating e.g. generated heat from the enclosure. The air outlet of the control unit may be located in a potentially explosive atmosphere; it is certified correspondingly.

⚠ WARNING
Only use the device for its intended purpose! ▷ Otherwise, the manufacturer's liability and warranty expire. ▶ The device may only be used under the operating conditions described in these operating instructions. ▶ The device may only be used in hazardous areas according to these operating instructions.

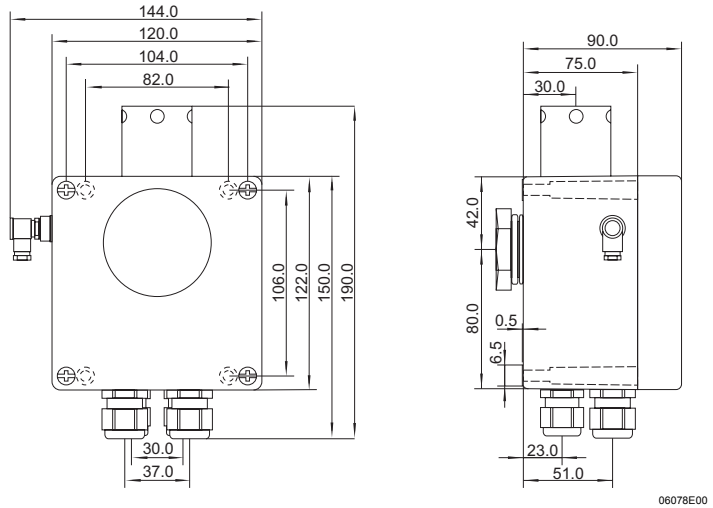
5 Technical Data

Version	**Control Unit**
Safety-specific data	
Gas explosion protection	⟨Ex⟩ II 2 G Ex mb e ia [px] [ia] IIC T4 or ⟨Ex⟩ II 2 G Ex mb e ia [px] IIC T4
Certificates	TÜV 07 ATEX 554304
Rated operational voltage	12 V / 24 V DC 24 V / 115 V AC ± 10%; 48 .. 62 Hz 230 V AC + 8.5 / - 10%; 48 .. 62 Hz 250 V AC + 5 / -15 %; 48 .. 62 Hz
Rated operational current	250 mA at 12 / 24 V DC 300 mA at 24 V AC 60 mA at 115 V AC 30 mA at 230 / 250 V AC
Ambient temperature	- 30 °C ≤ T_{amb} ≤ + 60 °C
Housing material	Epoxy resin, glass-fibre reinforced, black, antistatic
Switching threshold	of the output relay according to DIN VDE 0435:

Contact potential	Type of current	max. current value	Power factor cos φ	Service category	L/R
250 V	AC	6 A	1		
240 V	AC	3 A	0.3	AC-15	
24 V	DC	6 A			0 ms
30 V	DC	2.5 A		DC-13	50 ms

Terminals	
Rated current	32 A for rated cross section and T_a ≤ 40 °C
Rated cross section	4 mm^2 (12 AWG)
Terminal capacity	0.2 .. 4 mm^2 (24 .. 12 AWG)

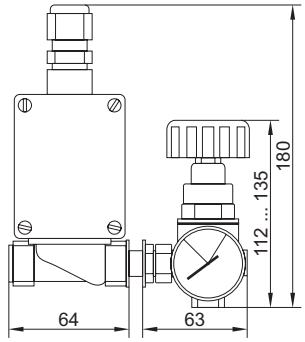
Dimensional drawings (all dimensions in mm) - subject to alterations



Control unit 8624/1

Version	**Air Supply Unit**
Safety-specific data	
Gas explosion protection	⟨Ex⟩ II 2 G Ex mb II T4/T5/T6 or ⟨Ex⟩ II 2 G Ex e mb II T4/T5/T6
Certificates	PTB 00 ATEX 2129 X
Rated operational voltage	12 V / 24 V 115 V / 230 V UC 230 V AC + 10% / - 10%
Rated operational current	600 mA at 12 V 300 mA at 24 V 60 mA at 115 V 30 mA at 230 V
Back-up fuse	1.0 A at 12 V 0.63 A at 24 V 0.125 A at 115 V 0.08 A at 230 V
Ambient temperature	-30 °C ... +60 °C
Housing material	Brass and epoxy resin, glass-fibre reinforced, black, antistatic
Pressure controller	
Connection	1/4"
Outlet pressure	0.5 ... 3 bar
Flow	490 l/min

Dimensional drawings (all dimensions in mm) - subject to alterations



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Air supply unit

6 Transport, Storage and Disposal

Transport

▶ Shock-free in its original carton, do not drop, handle carefully.

Storage

▶ Store in a dry place in its original packaging

Disposal

▶ Ensure environmentally friendly disposal of all components according to legal regulations.

7 Assembly

☞	Any mounting position is possible but make sure that the display is still legible.

7.1 Drilling of the assembly bore holes

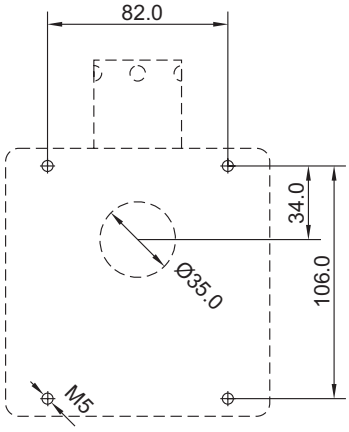

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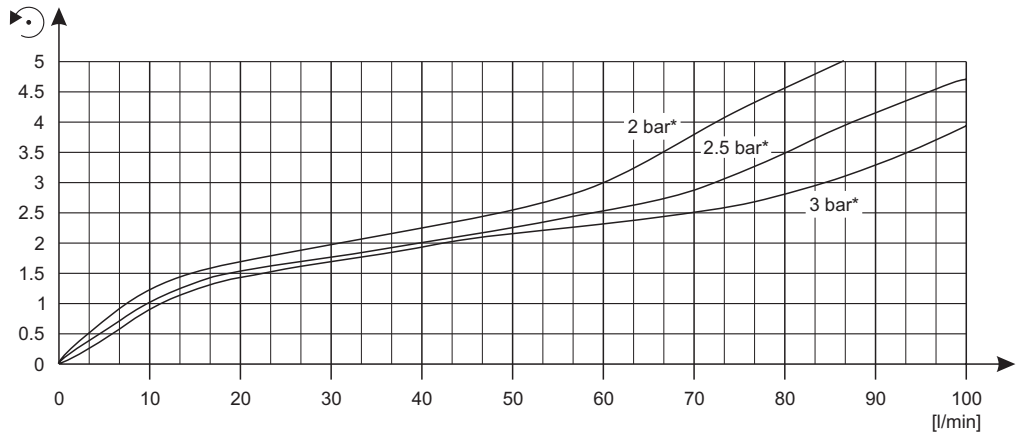
Fig. 7-1: Drill pattern for control unit

Drill the following assembly holes on the housing wall:

✗ 4 threaded holes M5 (see Fig. 7-1)
✗ 1 hole ∅ 35 mm for intake screw connection (see Fig. 7-1)
✗ 1 hole ∅ 17 mm for air supply unit

7.2 Setting of the leakage air volume at the air supply unit

☞	The leakage nozzle is set at factory to an air volume of 15 l/min, at a pressure of 2 bar. The pressure controller is set at factory to a pressure of 2 bar.



* pressure set on pressure controller

Fig. 7-2: Leakage air diagram

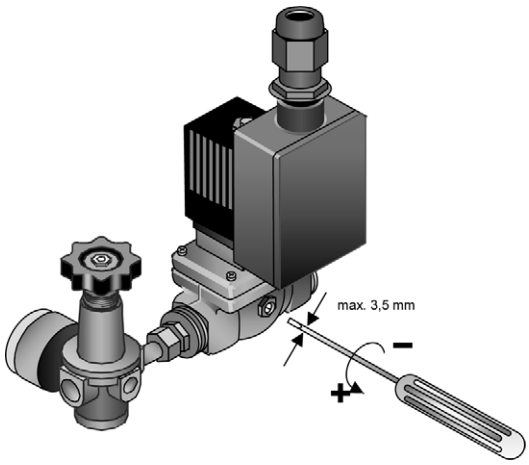


Fig. 7-3: Setting the leakage air volume

- ▶ Close the adjusting screw on the solenoid valve in clockwise direction as far as possible.
- ▶ Turn the adjusting screw in anti-clockwise direction until the desired leakage air volume is reached (see leakage air diagram, Fig. 7-2)

7.3 Assembly of the components

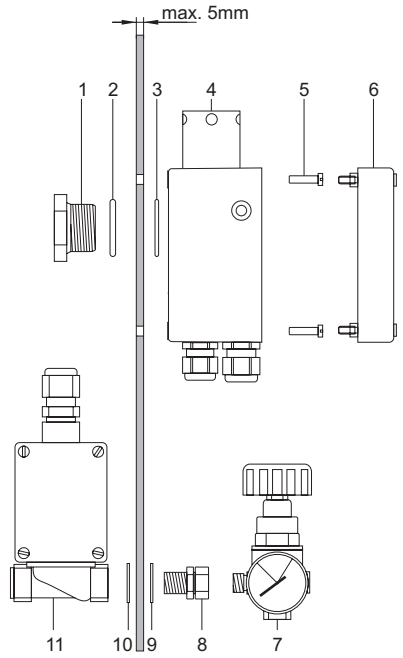


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Fig. 7-4: Assembly of the components

- ▶ Put the O-ring 33.7 x 2.2 mm (3) between enclosure wall and control unit (4) and fix it with the fixing screws (5).
- ▶ Screw the intake screw connection (1) together with the O-ring 33.7 x 3.5 mm (2) into the control unit.
- ▶ Mount the solenoid valve (11) and the sealing disks (9,10) with the connecting piece (8).
- ▶ Mount the pressure controller (7) on the connecting piece.
- ▶ Connect the pressure controller to the compressed air supply or the inert gas supply.

7.4 Connection of the components

Compressed air supply

☞	The throughput of a preceding pressure controller or filter must be minimum that of the digital controller.

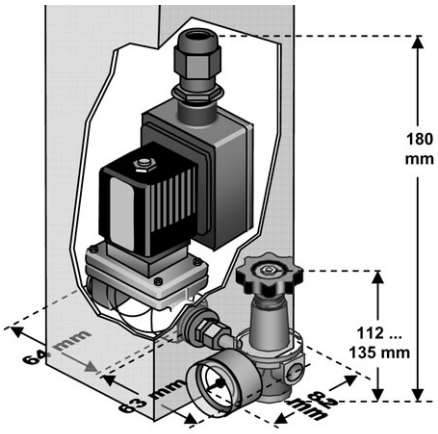

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Fig. 7-5: Compressed air supply connection

- ▶ Connect the pressure controller to the compressed air supply (connection: G 1/4").
- ▶ Make sure that the volume flow required for operation is available (see table 7-1).

Supply pressure (bar)	Minimum volume flow			
	Nozzle 2.0 mm	Nozzle 2.5 mm	Nozzle 3.0 mm	Nozzle 3.8 mm
1.0	2.8 m^3/h	4.6 m^3/h	7.0 m^3/h	9.0 m^3/h
1.5	3.9 m^3/h	6.25 m^3/h	9.0 m^3/h	15.0 m^3/h
2.0	4.7 m^3/h	7.5 m^3/h	11.0 m^3/h	18.0 m^3/h
2.5	5.7 m^3/h	9.5 m^3/h	13.5 m^3/h	22.0 m^3/h
3.0	6.6 m^3/h	10.0 m^3/h	15.0 m^3/h	24.0 m^3/h *)

Table 7-1: Minimum volume flow

Mains connection

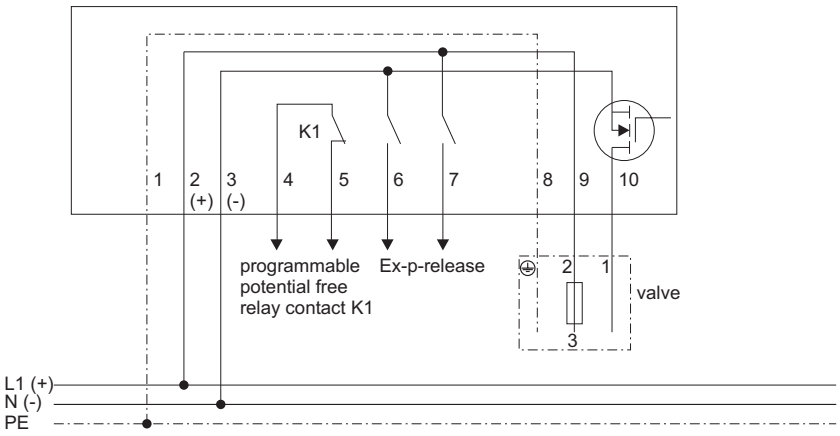

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Fig. 7-6: Circuit diagram, standard version

- ▶ Carry out the connection of the control unit to mains supply and the connection between control unit and solenoid valve in accordance with the circuit diagram (see Fig. 7-6).

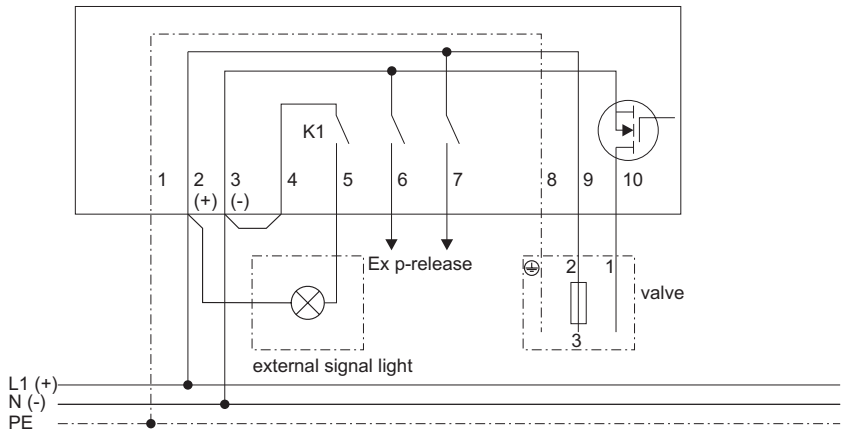


Fig. 7-7: Circuit diagram, connection of an external signal lamp

- If necessary, connect a signal station to the potential-free contact K1 (see fig. 7-7).
- Close the enclosure cover of the control unit carefully.
- Carefully screw down all the cable entries.
- Ensure that unused cable entries are sealed with plugs certified to Directive 94/9/EC.

8 Function/troubleshooting

8.1 General functional description

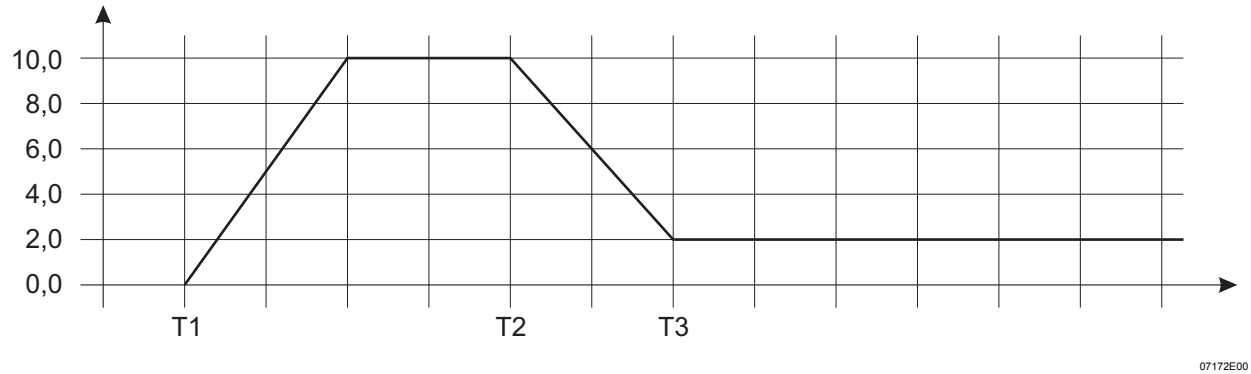


Fig. 8-1: General function

T1: After connecting the power and compressed air supply, the control unit starts a self-test.

T2: Purging is finished.
The preset internal pressure of the enclosure is adjusted (2 mbar).
The devices in the Ex p enclosure are connected.

T3: Normal operation starts.
The internal pressure of the enclosure is regulated to the nominal value (2 mbar).
It is monitored in order not to fall below the MIN value (factory settings: 0.8 mbar) or exceed the MAX value (factory settings: 15.0 mbar).

8.2 Behaviour of the control unit in normal operation

In normal operation, the control unit controls and regulates the internal pressure of the Ex p enclosure to the nominal overpressure compared to the surrounding atmosphere.

Factory settings are:

- ✗ MIN: 0.8 mbar
- ✗ MAX: 15.0 mbar

In case of increased internal pressure (factory settings: 4.0 mbar) compared to the surrounding atmosphere, a mechanical valve of the control unit opens automatically. The increased pressure is reduced until reaching the set value (factory settings: 3.5 mbar).

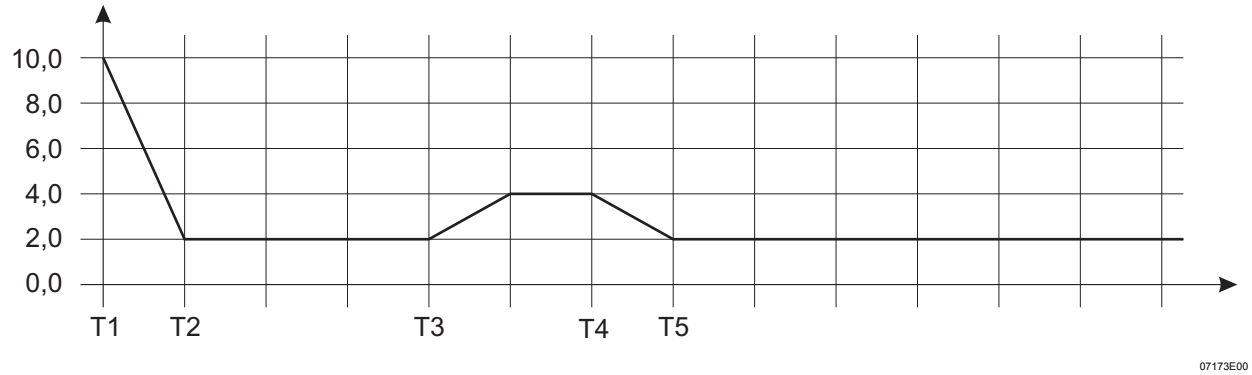


Fig. 8-2: Normal operation

T1: Purging is finished.
The preset internal pressure of the enclosure is adjusted (2 mbar).
The devices in the Ex p enclosure are connected.

T2: Normal operation starts.
The internal pressure is adjusted to the nominal value (2 mbar).

T3: The internal pressure of the enclosure increases.

T4: The internal pressure is reduced via the mechanical valve in the control unit.

T5: Normal operation starts.

8.3 Behaviour of the control unit in case of fault

The system faults described in this chapter may only be eliminated by qualified maintenance personnel.

Do not carry out any work on the control unit or digital controller before being authorized so by the manufacturer.

Fault during purging

Purging is interrupted if:

- ✗ Power supply fails for more than 2 seconds
- ✗ The internal pressure of the enclosure falls below the set MIN value (factory settings: 0.8 mbar)
- ✗ The internal pressure of the enclosure exceeds the set MAX value (factory settings: 15.0 mbar)
- ✗ The volume flow (compressed air or inert gas) falls below the adjusted minimum flow (factory settings: 0.6 l/s)

☞	After having eliminated the fault, the control unit automatically starts a new purging process.

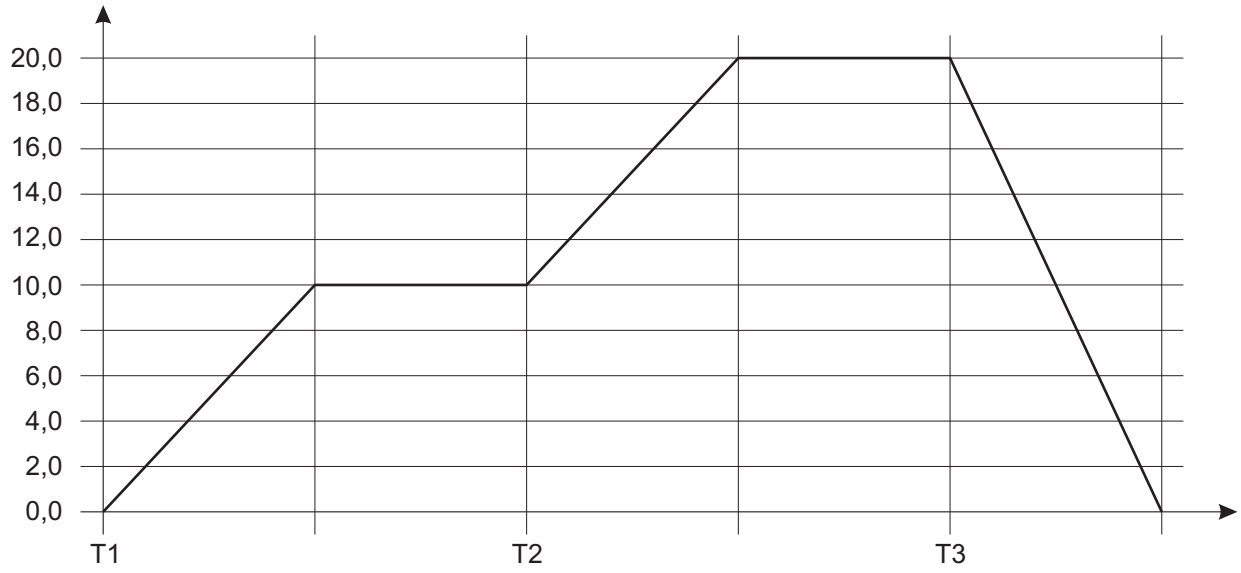


Fig. 8-3: Fault during purging

T1: Purging starts after connecting the power and compressed air supply.

T2: The internal pressure starts increasing.

T3: Purging is cancelled.

Fault during normal operation

Normal operation is automatically deactivated if:

- ✗ Power supply fails for more than 2 seconds
- ✗ The internal pressure of the enclosure falls below the set MIN value (factory settings: 0.8 mbar)
- ✗ The internal pressure of the enclosure exceeds the set MAX value (factory settings: 15.0 mbar)

☞	After having eliminated the fault, the control unit is activated automatically. The control unit starts a new purging process if the pressure had fallen below the MIN value.

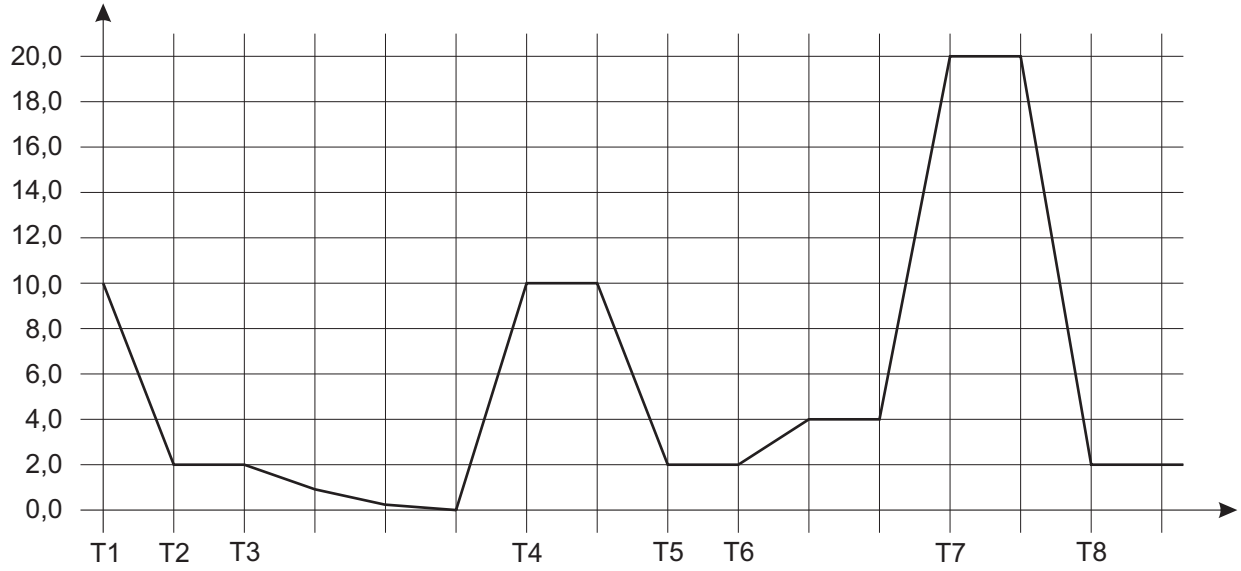


Fig. 8-4: Fault during normal operation

T1: Purging is finished.
The preset internal pressure of the enclosure is adjusted (2 bar).
The devices in the Ex p enclosure are connected.

T2: Normal operation starts.
The internal pressure is adjusted to the nominal value (2 bar).

T3: The internal pressure starts falling.
The devices in the enclosure are switched off when reaching the MIN value.

T4: Repeated purging.

T5: Normal operation starts.

T6: The internal pressure starts increasing. The increased internal pressure cannot escape via the mechanical valve of the control unit.

T7: The devices in the enclosure are switched off when reaching the MAX value.

T8: After pressure relief, normal operation starts again without repeated purging.

8.4 Troubleshooting

Fault number	Explanation	Elimination
01	Check sum error - Eprom defective	Inform the technical service of the manufacturer
02	Remote control defective	Replace the remote control
03	Eprom error - Eprom defective. The values of the same variables are different in all three Eproms	Inform the technical service of the manufacturer
04	A/D converter DSS1 defective. Conversion not in value range from 0 to 51.2 mbar.	
05	A/D converter DSS2 defective. Conversion not in value range from 0 to 51.2 mbar.	
06	A/D converter DSS3 defective. Conversion not in value range from 0 to 51.2 mbar.	
07	Output relay fault. Output relay does not switch or does not switch correctly.	
08	Multiprocessor communication failed	
09	A processor is defective	

Table 8-1: Fault number according to self-test

Fault	Consequence	Possible cause	Elimination
Purging does not start	After connecting the operating voltage, the remaining purging time is not displayed	Fuse in the control unit defective	Technical service by manufacturer
	After connecting the operating voltage and opening the compressed air supply, the remaining purging time is not displayed	Minimum overpressure for start of purging is not reached	Seal the enclosure and the installed equipment, readjust the leakage nozzle if necessary
		Air quantity is not sufficient for successful purging	Dynamic suction pressure too low (< "Switchpoint purging"). Set the suction pressure to minimum 2 bar (dynamic pressure)
		MIN pressure not reached. Internal pressure of the enclosures is not sufficient after purging. Pressure decreases.	Seal the enclosure and the installed equipment, readjust the leakage nozzle if necessary
		Air quantity is not sufficient for successful purging. Cross-section of the compressed air / inert gas supply is too small	Increase the diameter of the air supply tube
		Pressure controller adjusted incorrectly (e.g. 2 bar, static pressure)	Select 2.0 bar dynamic pressure on the pressure controller (i.e. with throughput of compressed air / inert gas)
		Fuse of the flush valve is defective (valve is closed when de-energised)	Change the fuse on the digital proportional valve
Purging is interrupted	After 5 seconds, the remaining purging time is reset to the initial value	Air quantity is not sufficient for successful purging	Dynamic suction pressure too low. Set the suction pressure to minimum 2 bar (dynamic pressure)
		MIN pressure not reached. Internal pressure of the enclosures is not sufficient after purging. Pressure decreases.	Seal the enclosure and the installed equipment, readjust the leakage nozzle if necessary
		Air quantity is not sufficient for successful purging. Cross-section of the compressed air / inert gas supply is too small	Increase the diameter of the air supply tube
		Pressure controller adjusted incorrectly (e.g. 2 bar, static pressure)	Select 2.0 bar dynamic pressure on the pressure controller (i.e. with throughput of compressed air / inert gas)
	After more than 10 seconds, the remaining purging time is reset to the initial value	Air quantity is not sufficient for successful purging. Cross-section of the compressed air / inert gas supply is too small	Increase the diameter of the air supply tube
			Recalibrate to 1 bar suction pressure. Double the purging time

Fault	Consequence	Possible cause	Elimination
Normal operation does not start after successful purging	The internal pressure is displayed for approx. 4 seconds. Then the display is switched off.	MIN pressure not reached. Internal pressure of the enclosures is not sufficient after purging. Pressure decreases.	Seal the enclosure and the installed equipment, readjust the leakage nozzle if necessary
	The internal pressure is displayed during a short time (longer than 4 seconds). Then the display is switched off.	MIN pressure not reached. Internal pressure of the enclosures is not sufficient after purging. Pressure decreases.	Seal the enclosure and the installed equipment, readjust the leakage nozzle if necessary
		Pressure controller adjusted incorrectly (e.g. 2 bar, static pressure)	Select 2.0 bar dynamic pressure on the pressure controller (i.e. with throughput of compressed air / inert gas)
		MAX pressure exceeded. Internal pressure too high. Pressure is increasing due to e.g. heating	Readjust the leakage nozzle
			Control the limit value for "Switchpoint max. pressure" and enter the new value.
		MAX pressure exceeded. Air outlet (mechanical valve of the control unit) is closed or clogged	Open or clean the air outlet of the control unit
	The internal pressure is displayed but there is no authorization for non-explosion-protected devices in the enclosure	Electrical wiring defective	Control electrical connections
Device switches off permanently during running operation	Device switches off sporadically, then purging restart	Internal pressure reaching limit value	Readjust the leakage nozzle
		The suction pressure of the system fails temporarily, e.g. when switching on a large consumer	Increase the suction pressure on the pressure controller to max. 3.5 bar
	Automatic disconnection of the non-explosion-protected devices in the enclosure	Power supply fails more than 2 seconds	Automatic restart
		MIN pressure not reached. Enclosure not tight	Seal the enclosure and the installed equipment, readjust the leakage nozzle if necessary
		MIN pressure not reached. Cross-section of the compressed air / inert gas supply is too small	Replace the tubes by tubes with larger cross-section
		MAX pressure exceeded. Air outlet (mechanical valve of the control unit) is closed or clogged	Open or clean the air outlet of the control unit
	The display of the internal pressure is not deactivated 4 seconds after pressure loss (e.g. by opening the enclosure door)	"Swichpoint min. pressure" set incorrectly	Set a new limit value
		Key-operated bypass switch is active	Turn the key-operated switch to the "Off" position

Table 8-2: Fault during operation

9 Setting parameters for the control unit

⚠ WARNING	
	Danger from energised parts! ▷ In order to set the parameters, the cover of the control unit must be removed while the unit is energised. ▶ Open the cover only if guaranteed that there will not be any potentially explosive atmosphere until closing the cover! ▶ Do not touch live parts!

9.1 Display and operating elements

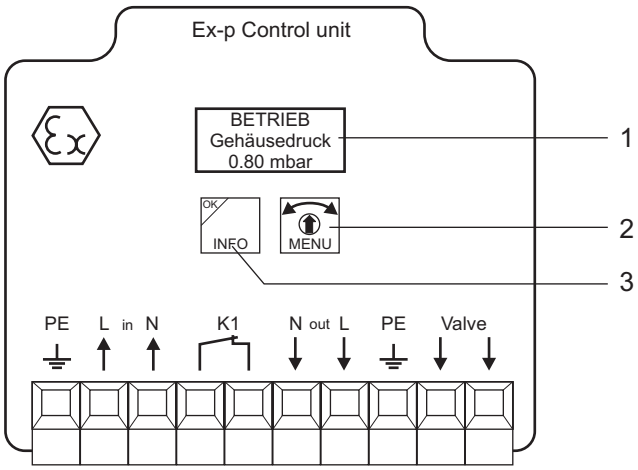


Fig. 9-1: Display and operating elements

	Display / operating element	Function
1	Display	Remaining purging time is displayed during purging. Internal pressure is displayed during normal operation. Error codes or fault messages are displayed in case of fault. Saved parameters or parameters to be changed are displayed.
2	Selector switch	Selecting and changing parameters
3	Info/OK key	Loading and confirming parameters

9.2 Displaying / setting parameters

Displaying parameters

▶ Remove the cover of the control unit.
▶ Toggle between the different parameters by pressing the "Info/OK" key (for displayable parameters see fig 9-2).

☞	The control unit will return to the normal mode if the "Info/OK" key is not pressed for 10 s.

Setting the parameters

- ▶ Remove the cover of the control unit.
- ▶ Toggle between the different parameters by turning the selector switch (adjustable parameters see fig. 9-2).
- ▶ Switch to the editing mode by pressing the "Info/OK" key.

☞	The control unit will return to the normal mode if the selector switch is not actuated for 10 seconds.

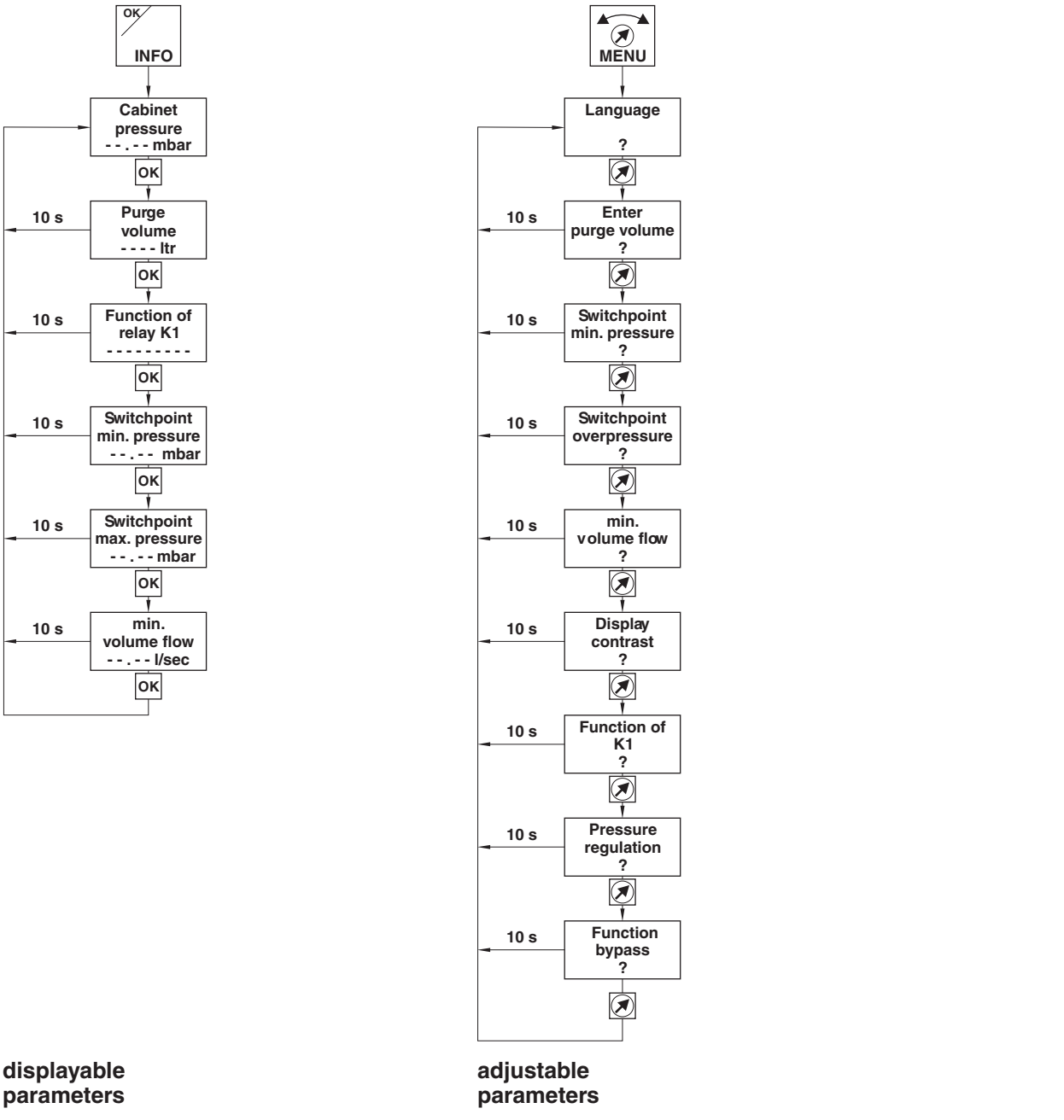


Fig. 9-2: Parameters

9.3 Resetting the factory settings

- ▶ Switch off the power supply of the control unit.
- ▶ Set the selector switch to the 1 o'clock position (arrow pointing upwards, then one step in clockwise direction).
- ▶ Switch on the power supply of the control unit with pressed "Info/OK" key.
- ▶ Release the "Info/OK" key when "Load factory settings" appears on the display.
- ▷ The control unit has been reset to factory settings.

9.4 Setting the language

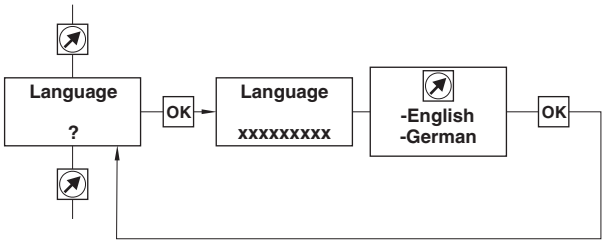


Fig. 9-3: Setting the language

- ▶ Select the "Language?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired language by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▷ The display switches back to "Language?".
- ▷ The desired parameter is set.

☞	Factory settings: English

9.5 Adjusting the purge volume

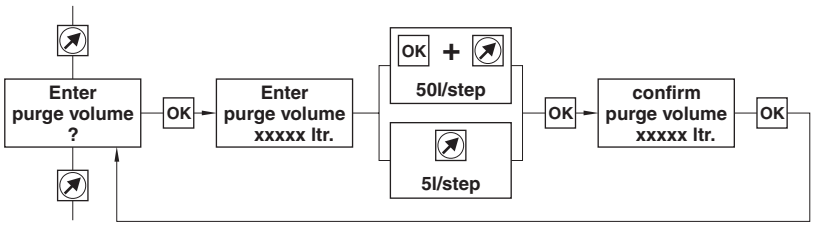


Fig. 9-4: Adjusting the purge volume

- ▶ Select the "Enter purge volume?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired value by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the value.
- ▷ A request for confirming the value again is prompted.
- ▶ Press the "Info/OK" key to confirm the value again.
- ▷ The display switches back to "Enter purge volume?".
- ▷ The desired parameter is set.

☞	Possible adjustment range: 5 l - 50.000 l Factory settings: 100 l

9.6 Setting the switchpoint for the minimum pressure

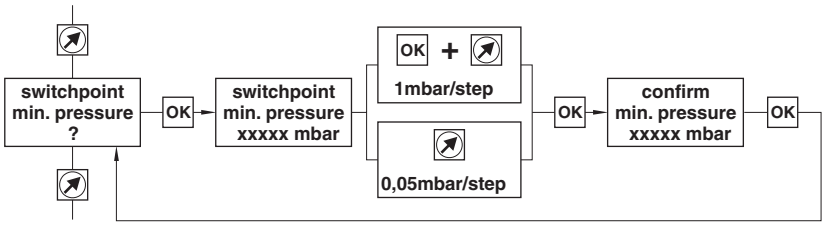


Fig. 9-5: Setting the switchpoint for the minimum pressure

- ▶ Select the "Switchpoint min. pressure?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired value by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the value.
- ▷ A request for confirming the value again is prompted.
- ▶ Press the "Info/OK" key to confirm the value again.
- ▷ The display switches back to "Switchpoint min. pressure?".
- ▷ The desired parameter is set.

☞	Possible adjustment range: 0.8 mbar - 25.0 mbar. Factory settings: 0.8 mbar

9.7 Setting the switchpoint for the maximum pressure

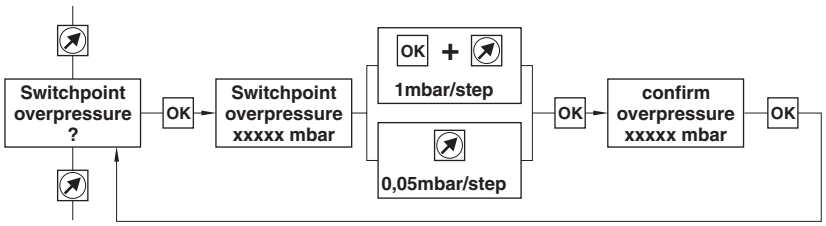


Fig. 9-6: Setting the switchpoint for the maximum pressure

- ▶ Select the "Switchpoint overpressure?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired value by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the value.
- ▷ A request for confirming the value again is prompted.
- ▶ Press the "Info/OK" key to confirm the value again.
- ▷ The display switches back to "Switchpoint overpressure?".
- ▷ The desired parameter is set.

☞	Possible adjustment range: 0.8 mbar - 25.0 mbar. Factory settings: 15.0 mbar

9.8 Setting the minimum volume flow

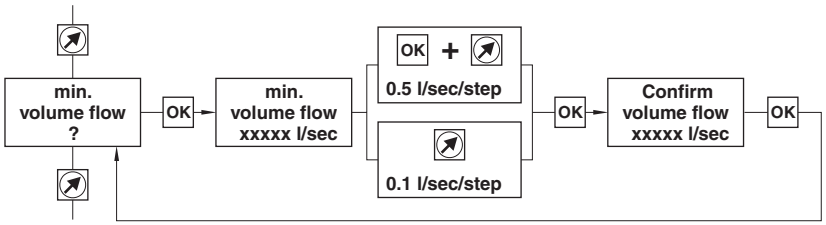


Fig. 9-7: Setting the minimum volume flow

- ▶ Select the "min. volume flow?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired value by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the value.
- ▷ A request for confirming the value again is prompted.
- ▶ Press the "Info/OK" key to confirm the value again.
- ▷ The display switches back to "min. volume flow?".
- ▷ The desired parameter is set.

☞	Possible adjustment range: 0.3 l/s - 3.6 l/s. Factory settings: 0.3 l/s

9.9 Setting the display contrast

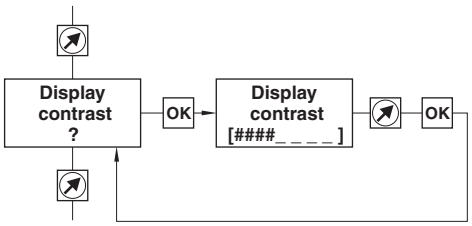


Fig. 9-8: Setting the display contrast

- ▶ Select the "Display contrast?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired value by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the value.
- ▷ The display switches back to "Display contrast?".
- ▷ The desired parameter is set.

9.10 Setting the function of relay K1

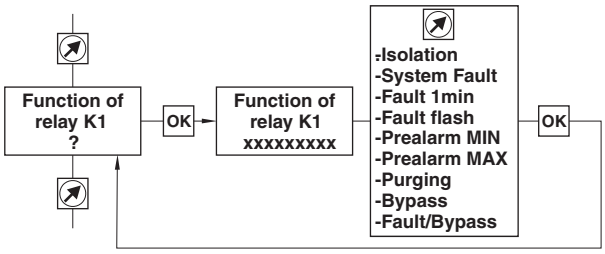


Fig. 9-9: Setting the function of relay K1

- ▶ Select the "Function of relay K1?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired function by turning the selector switch (for information on the available functions see table 9-1).
- ▶ Press the "Info/OK" key to confirm the function.
- ▷ The display switches back to "Function of relay K1?".
- ▷ The desired function is set.

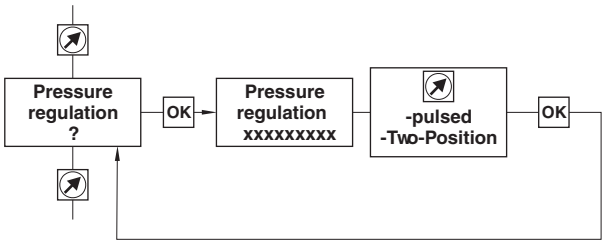
☞	Factory settings: Isolation

Functions of relay K1

	Function
Isolation	The relay is normally closed and opens in case of a fault.
System Fault	The relay is normally closed and opens in case of a system fault.
Fault 1 min	The relay is normally closed and opens 1 minute after a fault occurred.
Fault flash	The relay is normally closed and opens for the first time 1 minute after a fault occurred. Then it alternates every second.
Prealarm MIN	The relay is normally closed and opens if the internal pressure has fallen to 0.3 bar over the set value "Switchpoint min. pressure".
Prealarm MAX	The relay is normally closed and opens when the internal pressure exceeds the set value "Switchpoint overpressure".
Purging	The relay is closed during the purging.
Bypass	The relay is closed as long as the bypass in the operating device (optional) or the external key-operated switch (optional) is activated.

Table 9-1: Functions of relay K1

9.11 Setting the pressure regulation



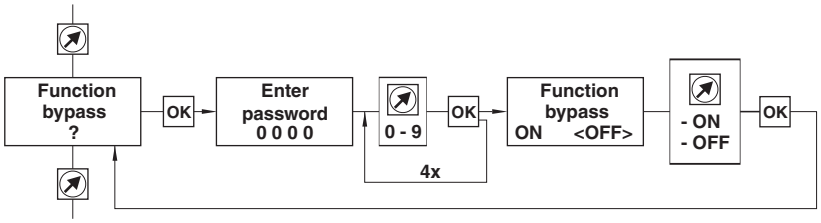
07185E02

Fig. 9-10: Setting the pressure regulation

- ▶ Select the "Pressure regulation?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the desired function by turning the selector switch (pulsed or two-position).
- ▶ Press the "Info/OK" key to confirm the function.
- ▷ The display switches back to "Pressure regulation?".
- ▷ The desired function is set.

☞	Factory settings: pulsed

9.12 Setting the bypass function



07186E02

Fig. 9-11: Setting the bypass function

- ▶ Select the "Function bypass?" display by turning the selector switch by means of a screwdriver.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▶ Select the first digit of the password by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the first digit.
- ▶ Repeat this process for the second to fourth digit of the password.
- ▷ The display switches to "Function bypass ON <OFF>".
- ▷ The desired function is set.
- ▶ Select the desired function by turning the selector switch.
- ▶ Press the "Info/OK" key to confirm the selection.
- ▷ The display switches back to "Function bypass?".
- ▷ The desired function is set.

☞	Factory settings: OFF

10 Commissioning

Before commissioning, ensure that:

- ✗ the cover of the control unit is correctly closed,
- ✗ unused cable entries are sealed with plugs certified to Directive 94/9/EC, and unused holes are sealed by stopping plugs certified to Directive 94/9/EC.
- ✗ the operating mode and the purging process is set according to the corresponding zone.

11 Maintenance

11.1 Regular Maintenance Work

- ▶ Consult the relevant national regulations (e.g. IEC/EN 60079-17) to determine the type and extent of inspections.
- ▶ Plan the intervals so that any defects in the equipment which may be anticipated are promptly detected.

To check as part of the maintenance schedule:

- ✗ Check that cables are clamped properly.
- ✗ Inspect device for visible damage.
- ✗ Compliance with the permitted temperatures in accordance with IEC/EN 60079-0.
- ✗ Make sure the device is used according to its designated use.

11.2 Cleaning

The inspection window of the control unit must be cleaned only when it is heavily soiled.

- ✗ Clean with a moist cloth.
- ✗ Use water or mild, non-abrasive, non-scratching cleaning agents.
- ✗ Never use aggressive cleaning agents or solvents.

11.3 Repair work

⚠ WARNING
Danger due to improper repair! ▷ Improper repairs may impair the explosion protection! ▶ The control unit must be repaired only by the manufacturer!

Note in accordance with the ordinance on hazardous substances

In accordance with the German waste management act dated 27.8.1986 (AbfG. §11 Special waste) the owner of special waste is responsible for the disposal. At the same time, the employer is obliged to protect his employees according to the German ordinance on hazardous substances dated 1.10.1986 (GefStoffV. §17 General Protection Duty).

Therefore, we must point out that:

1) all the devices and/or systems which are sent back to R. STAHL for repair must be free from hazardous substances (acids, caustics, solvents, explosive gas compounds, etc.).
2) all the devices and/or systems which are sent to R. STAHL must be handled in a way that they do not contain any dangerous liquids or other hazardous substances. Thus, devices and/or systems that have come into contact with dangerous substances (see GefStoffV.) must be neutralised.
3) the measures carried out under (1) and (2) during service and repair works must be confirmed in writing.
4) the costs that arise due to the disposal of hazardous substances during a repair will be invoiced to the owner.

12 Accessories and Spare Parts

⚠ WARNING
Use of non-approved accessories and spare parts. ▷ The manufacturer's liability and warranty expire. ▶ Use only original accessories and original spare parts manufactured by R. STAHL.

13 Type Examination Certificate (Page 1)

Translation

(1) **EC-Type Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3) **Certificate Number** **TÜV 07 ATEX 554304**

(4) for the equipment: Control Unit type 8624/1-....-

(5) of the manufacturer: **R. STAHL Schaltgeräte GmbH**

(6) Address: Am Bahnhof 30
74638 Waldenburg (Württ.)

Order number: 8000554304

Date of issue: 2007-12-18

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 07203554304.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2006 **EN 60 079-2:2004** **EN 60 079-7:2003**
EN 60079-11:2007 **EN 60 079-18:2004**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

Ex II 2 G Ex mb e ia [px] [ia] IIC T4 resp. II 2 G Ex mb e ia [px] IIC T4

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

This certificate may only be reproduced without any change, schedule included.
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

P17-F-011 06-06

page 1/4

CERT A4 VU-H 06.05 5000 dia

14 Declaration of Conformity

EG-Konformitätserklärung
EC-Declaration of Conformity
CE-Déclaration de Conformité

Wir *(we; nous)*

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, 74638 Waldenburg, Germany **8624/1.-...-.**

erklären in alleiniger Verantwortung, dass das Produkt
hereby declare in our sole responsibility, that the product
déclarons de notre seule responsabilité, que le produit

Steuergerät
Control unit
Unité de commande

mit der *(under; avec)* **EG-Baumusterprüfbescheinigung:**
EC-Type Examination Certificate:
Attestation d'examen CE de type:

TÜV 07 ATEX 554304

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standards or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie *terms of the directive* *prescription de la directive*	**Nummer sowie Ausgabedatum der Norm** *Number and date of issue of the standard* *Numéro ainsi que date d'émission des normes*
94/9/EG: ATEX-Richtlinie *94/9/EC: ATEX Directive* *94/9/CE: Directive ATEX*	EN 60079-0:2006 EN 60079-2:2004 EN 60079-7:2003 EN 60079-11:2007 EN 60079-18:2004
2004/108/EG: EMV-Richtlinie *2004/108/EC: EMC Directive* *2004/108/CE: Directive CEM*	EN 50081-1:1993 EN 50081-2:1993 EN 50082-1:1996 EN 50082-2:1996

Qualitätssicherung Produktion:
Production Quality Assessment:
Assurance Qualitée Production:
PTB 96 ATEX Q006-4

Kenn-Nr. der benannten Stelle / *Notified Body number / N° de l'organisme de certification:* 0102

Waldenburg, 12.03.2008

Ort und Datum
Place and date
lieu et date

i.V.

B. Limbacher
Leiter Entwicklung
Head of Development
Directeur Développement

i.V.

Dr. S. Jung
Leiter Qualitätsmanagement
Director Quality Management Dept.
Directeur Dept. Assurance de Qualité

TXV 03/99 Papier chlorfrei

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